EFFECTIVENESS OF LIFESTYLE MODIFICATION PROGRAM ON BODY MASS INDEX (BMI) AMONG OVERWEIGHT AND OBESE ADOLESCENCE STUDYING IN SELECTED SCHOOLS, BENGALURU

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ABSTRACT

This study was aimed to assess prevalence and effectiveness of lifestyle modification program on body mass index (BMI) among overweight and obese adolescents studying in selected schools. ***Methodology****: Descriptive survey approach was employed to assess the overweight and obesity among adolescents and quasi experimental one group pre test, post test design was employed to evaluate the effectiveness of lifestyle modification program. Samples were selected by non-probability purposive sampling technique to assess the overweight and obese adolescents and simple random sampling technique to select the samples for administration of lifestyle modification program. The samples consisted of 1168 adolescents to assess the BMI and 200 overweight and obese adolescents who met the inclusion criteria were selected to administer lifestyle modification programme. Anthropometric measurements using standardized weighing machine, inch tape and demographic performa were used to collect the data. After administration of lifestyle modification program, BMI among overweight and obese adolescents was assessed on the 30th and 90th day using same instruments.* ***Results:*** *The findings of the study revealed that out of 1168 adolescents studying in selected schools, Bengaluru, most 833 (71.32%) had healthy weight, 176 (15.06%) were overweight, 123 (10.53%) were underweight and 36 (3.08%) were obese. Among 200 overweight and obese adolescent samples selected for study, in pretest almost 166 (83%) of them were overweight and 34 (17%) were obese adolescents. There was improvement in BMI after administration of lifestyle modification program during post test one and post test two with 3 (1.5%) and 24 (12%) had normal weight, 164 (82%) and 153 (76.5%) of the subjects were overweight, 33 (16.5%) and 23 (11.5%) were obese respectively. Calculated F value was 45.25 is greater than the tabled values at 0.05 level of significance. Post hoc analysis revealed that a significance change in total BMI from pre to post test II (p<0.05) and post test I to post test II (p<0.05) but no significant change in total BMI between pretest and post test I. Results also showed that the mean BMI of overweight adolescents reduced from 26.01 to 25.83 and BMI of obese adolescents reduced from 30.92 to 30.52. There was significant association between BMI of overweight and obese adolescents studying in selected schools and their selected demographic variables like age in years, gender, religion, standard of education, education of father and mother, occupation of father and mother, monthly income of the family, number of siblings in the family and type of food consumed.* ***Conclusion:*** *The lifestyle modification program was effective in improving the BMI among overweight and obese adolescents****.***

Key words: *BMI, effectiveness, lifestyle modification programme, overweight and obese Adolescents.*

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INTRODUCTION

Adolescence is the time at which a child turns out to be physically and mentally developed and obtains an individual character. It is the maximum fascinating duration in which the transition marks from being a dependent child to an independent adult.[1] Obesity could be a complicated disorder that results from a mixture of biological, social, environmental and activity factors.[2]

Lifestyle is the innate nature in which a person or group of people live. It includes where they leave, type of occupation and activities they enjoy to do in day to day life. Each person's lifestyle may be healthy or unhealthy based on the nutrition he takes, physical activities he is involved in and his personal behavior. A positive lifestyle brings about happiness and health whereas negative lifestyle will cause illness and diseases. [3,4]. In current situation children and adolescents' physical activity level is considerably less, as they spend most of their leisure time in sedentary lifestyles like watching TV and playing video games on computer. On an average the child and adolescents of age 2 to 18 years spend more than 5hrs per day of their time on watching videotapes[5]. WHO recommends the minimum amount of physical activity to all age group to maintain good health. It is recommended that sedentary lifestyle individuals ought to begin with little amounts of physical activity as their daily routine and then progressively upsurge the length, frequency and intensity in course of time. The main nutritional problems in the modern world are overweight and obesity and are quickly growing in many advanced and emerging countries. According to the literature, an epidemic of obesity in adolescents seems to be the consequence of alterations in trendy society. Several researches in nutritional epidemiology have found the connection between food consumption patterns and surplus weight. A positive correlation was found between inadequate consumption pattern and high BMI gain in children and adolescents.[6]

Exercise, at any age group, is important. It mainly helps teenagers because it reduces stress, burn extra calories, and reflects positive attitude towards academics. Junk and fried food adds more to calories that leads to weight gain. So along with balanced diet, some type of exercise is correspondingly essential to keep themselves fit and healthy [7]. Medical care professionals handling adolescents and young adults are preferably positioned and matched to convey powerful messages encouraging good physical activity and behavioural modifications. Each experience speaks to a chance to get some information about physical action, give guidance, or sign to suitable pathways or opportunities.[8]

Researcher felt that early identification of overweight and obese adolescents and appropriate lifestyle modification program would greatly help in having healthy weight and lifestyle so that the onset of complications can be prevented and thus reducing the burden on the community and nation as a whole.

STATEMENT OF THE PROBLEM

"Effectiveness of lifestyle modification program on BMI among overweight and obese adolescence studying in selected schools, Bengaluru"

OBJECTIVES:

1. To assess the overweight and obesity among adolescence studying in selected schools.
2. To evaluate the effectiveness of lifestyle modification program on BMI of overweight and obese adolescence studying in selected schools.
3. To find the association between BMI of overweight and obese adolescence studying in selected schools and their selected demographic variables.

HYPOTHESIS:

All Hypotheses will be tested at 0.05 level of significance.

H_1: There will be significant difference in the pre test and post test BMI of overweight and obese adolescent studying in selected schools.

H_2: There will be a significant association between BMI of overweight and obese adolescent studying in selected schools.

METHODOLOGY

Descriptive survey approach was employed to assess the overweight and obesity among adolescents and quasi experimental one group pre test, post test design was employed to evaluate the effectiveness of lifestyle modification program. Samples were selected by non-probability purposive sampling technique to assess the overweight and obese adolescents and simple random sampling technique to select the samples for administration of lifestyle modification program. The samples consisted of 1168 adolescents to assess the BMI and 200 overweight and obese adolescents who met the inclusion criteria and studying in selected schools were selected to administer lifestyle modification programme. Subjects were administered with Demographic performa and Anthropometric measurements were taken using standardized weighing machine and inch tape.

Reliability in calibration of weighing scale and inch tape was carried and inter rater reliability was assessed and was found to be one and hence the tool was found to be valid and reliable. The Pilot study was conducted and results concluded that there was significant difference in the BMI among adolescent and lifestyle modification program was effective in improving the BMI among overweight and obese adolescent. The research tools were found to be feasible and practicable. No further changes were done in the tool after the pilot study. Ethical clearance was obtained from ethical committee.

Pretest was conducted followed by administration of lifestyle modification program. BMI among overweight and obese adolescents was assessed on the 30th and 90th day using same instruments. The samples cooperated well with the researcher.

RESULTS

The results revealed the following findings

Table 1: Frequency and percentage distribution of samples according to their BMI.

n=1168

Sl. No	BMI CLASSIFICATION	Frequency (f)	Percentage (%)
1.	Under Weight	123	10.53
2.	Healthy Weight	833	71.32
3.	Over Weight	176	15.06
4.	Obese	36	3.08

Out of 1168 adolescents studying in selected schools, Bengaluru, most 833 (71.32%) had healthy weight, 176 (15.06%) were overweight, 123 (10.53%) were underweight and 36 (3.08%) were obese.

Table 2: Frequency and percentage distribution of pre-test and posttest BMI among overweight and obese adolescents. **N**=200

BMI Classification	Pretest		Post test 1		Post test 2	
	F	%	f	%	f	%
Under Weight	0	0	0	0	0	0
Healthy Weight	0	0	3	1.5	23	12
Over Weight	166	83	164	82	153	76.5
Obese	34	17	33	16.5	24	11.5

Table 2 reveals that in pretest almost 166 (83%) of them were overweight and 34 (17%) were obese adolescents. There was improvement in BMI during post test I and post test II with 3 (1.5%) and 24 (12%) had normal weight, 164 (82%) and 153 (76.5%) of the subjects were overweight, 17 (33%) and 23 (11.5%) were obese respectively. In pretest BMI of the subjects ranged from 25.08-35.61with mean and SD 26.84±2.07, whereas in post test I BMI of the subjects ranged from 24.80-35.61 with mean and SD 26.82±2.08 and post test II BMI of the subjects ranged from 24.06-35.10 with mean and SD 26.63±2.05. It showed that the range of BMI reduced from pretest to post test II.

Table 4: Repeated measures ANOVA showing significance of difference in the mean BMI during three test periods. **N= 200**

Source		Sum of squares	df	Mean squares	F value	p value	Inference
BMI	**Between treatments**	5.59	2	2.79	45.25	<0.00001	Significant
	Within treatments	2557.62	597	4.28			

F (2,597) = 3.04 at 0.05 level of significance

Calculated F value was 45.25 was greater than the tabled values at 0.05 level of significance. Post hoc analysis revealed that a significance change in total BMI from pre to post test II ($p<0.05$) and post test I to post test II ($p<0.05$) but no significant change in total BMI between pretest and post test I. Results also showed that the mean BMI of overweight adolescents reduced from 26.01 to 25.83 and BMI of obese adolescents reduced from 30.92 to 30.52.

Table 5: Repeated measures ANOVA showing significance of difference in the mean BMI during three test periods among overweight and obese adolescents.

BMI		Sum of squares	df	Mean squares	F value	p value	Inference
Overweight	Between	3.053	2	1.53	29.79	<0.05	Significant
	Within	415.15	495	0.84			
Obese	Between	3.534	2	1.76	17.444	<0.05	Significant
	Within	161.30	99	1.63			

The data in the table 5 shows that the calculated F value was 29.79 and 17.44 is greater than the tabled values at 0.05 level of significance shows that here was significant difference in the pre test and post tests BMI scores among overweight and obese adolescents studying in selected schools. This indicates that the difference in mean pre and post tests BMI is not a chance but true difference, i.e., post tests BMI was higher than the pre test BMI. Post hoc analysis revealed that a significance decrease in total BMI from pre to post II and post I to post II whereas no changes in total BMI from pre to post I.

The all findings of the present study revealed that lifestyle modification program was effective in improving the BMI among overweight and obese adolescent.

Regarding association between demographic variables and BMI, it showed that demographic variables like age in years ($\chi2= 11.97$; $p<0.05$), gender ($\chi2= 4.39$; $p<0.05$), religion ($\chi2= 11.12$; $p<0.05$), standard of education ($\chi2= 7.96$; $p<0.05$), education of father ($\chi2= 8.38$; $p<0.05$) and mother ($\chi2= 8.09$; $p<0.05$), occupation of father ($\chi2= 9.99$; $p<0.05$)and mother($\chi2= 17.36$; $p<0.05$), monthly income of the family ($\chi2= 7.89$; $p<0.05$), number of siblings in the family ($\chi2= 16.17$; $p<0.05$) and type of food consumed ($\chi2=5.07$; $p<0.05$) there were association with BMI. Whereas there was no association between other demographic variables like type of family and previous knowledge on lifestyle practices and Body Mass Index.

DISCUSSION

Out of 1168 adolescents studying in selected schools, Bengaluru, most 833 (71.32%) had healthy weight, 176 (15.06%) were overweight, 123 (10.53%) were underweight and 36 (3.08%) were obese. The present study is also supported by results of another study revealed that total prevalence of underweight was 12.2%, normal weight 69.3%, overweight 14.5 % and obesity 4.0%.[9] Another study findings revealed that prevalence of obesity was 7.6%, 12.7% were overweight and 71.7% had healthy weight.[10] A study done in Raichur among 984 students aged 10 to 16 years revealed that the obesity was found to be 4.6% and overweight was found to be 11.3%.[11]

Analysis of BMI of the present study reveals that in pretest almost 166 (83%) of them were overweight and 34 (17%) were obese adolescents. There was improvement in BMI during post test I and post test II with 3 (1.5%) and 24 (12%) had normal weight, 164 (82%) and 153 (76.5%) of the subjects were overweight, only 17 (33%) and 23 (11.5%) were obese respectively. This result is supported by a study conducted in Karnataka revealed that the percentage of underweight adolescents before practice of PASHA was 57.3% whereas, after practice of PASHA the number came down to 55.30%. Similarly there was increase in percentage of normal weight of adolescents from 41.70-43.70%. However, there was no change in obese group.[12]

Results of the present study also showed that the mean BMI of overweight adolescents reduced from 26.01 to 25.83 and BMI of obese adolescents reduced from 30.92 to 30.52. This result can be discussed with results of a study which revealed that COPE teens had lower BMI ($p=0.01$) and increased number of steps per day ($p=0.03$) than those healthy teens. After 6months of intervention the COPE teens had lower BMI =24.72 than healthy teens = 25.05.there was significant difference between pre intervention BMI and 6month follow up (Chi square=4.69, $p=0.03$).

CONCLUSION

Childhood obesity is a global health problem. Nurses need to be ready to face this problem. This study helps to know the prevalence of Overweight and obesity among adolescents. This indeed raises awareness among nurse educators to train the nurses and equip them with knowledge about overweight and obesity among adolescents and teach them about ways to reduce and prevent complications. Nursing interventions such as providing educational package, health educations or various educational programs can be implemented in preventing and managing the condition. The teaching program developed by the researcher can be utilized by the nurses to teach the parents and adolescents.

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